

NOTES ON NEW YORK THYSANOPTERA, WITH DESCRIPTIONS OF NEW GENERA AND SPECIES. I.

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This is the first of a contemplated series of articles descriptive of the New York Thysanoptera. At the conclusion of these preliminary papers it is hoped that our knowledge of the forms occurring within the boundaries of the state will be sufficiently complete to permit the preparation of a general work on the subject, including analytical keys and suitable illustrations. To this end, the writer would welcome material from all parts of the state, and would be glad to furnish such special instructions for collecting as may be wanted. Material should be collected directly into 75 per cent. alcohol. Specimens received during the summer of 1925 will be fully credited as to source in the forthcoming List of New York Insects, which is being edited by Dr. M. J. Leonard, of Cornell University.

Heterothrips limbatus sp. nov. (Pl. IV, figs. 2 and 3.)

Female (macropterous).—Length about 1.2 mm. Color dark blackish brown (black to the naked eye); legs concolorous with body, excepting the tarsi, which are pale yellow and with the usual black spot at tip, and the fore tibiae, which are yellow and darkened with brown at base and along entire outer and inner surfaces; antennae concolorous with body, except for segment 1, which is slightly paler, and segment 3, which is bright yellow and faintly edged with brownish at extreme distal end; 3 and 4 suffused with orange pigmentation in the region of the sensoria; fore wings dark gray, excepting the usual white transverse band which involves the distal portion of the scale.

Head much wider than long (1.55 to 1.65), decidedly shorter than pronotum, widest about midway between eyes and base, cheeks arcuately rounded; surface with a few minute bristles, impressed and transversely rugose in front of anterior ocellus, nearly smooth between ocelli, and with five or six deep, anastomosing striae on occiput; frontal costa with deep, U-shaped emargination; ocellar area distinctly raised and convex. Eyes setose, about two-thirds as long as head and about as wide as their dorsal interval. Ocelli of posterior pair about twice the diameter of anterior ocellus, distinctly more than half as wide as their interval, directed

upward and outward. Antennae nearly or quite 2.9 times as long as head, of normal form and structure¹ except that segment 3 is distinctly more than three times as long as wide. (Pl. IV, fig. 3.)

Prothorax about 1.33 times as long as head and about 1.5 times as wide as long, sides and posterior margin rounded, anterior margin nearly straight; notum with a few short, inconspicuous bristles and with distinct, though not conspicuous, anastomosing lines of sculpture. Wings of fore pair slightly more than twice as wide near base as at middle, the greatest sub-basal width (exclusive of scale) about one-ninth the length of wing; costal margin, anterior vein, and posterior vein with about 39, 26, and 19 short, moderately stout bristles, respectively.

Abdomen stout (as is usual in the genus); pubescence sparse, disposed on the usual prominent, almost reticulate, lines; posterior margins of abdominal tergites 2-5 fringed their *entire* width with contiguous, chitinous scales or plates whose distal margins are very evenly produced in short, slender spines (Pl. IV, fig. 2); tergites 1, 6, and 7 with similar scales at sides only, the median third of 1 bare, that of 6 and 7 and the entire margin of 8 occupied each by a regular comb formed of long, slender spines arising from the posterior margins of the tergites themselves; sternites 2-6 fringed posteriorly with regularly disposed scales whose distal margins are produced into many very fine, slender spines.

Measurements of holotype (♀): Length 1.23 mm.; head, length 0.120 mm., greatest width 0.173 mm.; pronotum, length 0.161 mm., width 0.246 mm.; pterothorax, width 0.324 mm.; fore wings, length 0.930 mm., width at middle 0.044 mm., near base 0.100 mm.; abdomen, width 0.356 mm.

Antennal segments	.....	1	2	3	4	5	6	7	8	9
Length (μ)	.....	28	42	94	57	33	35	20	17	21
Width (μ)	.....	34	29	28	28	20	18	14	12	8
Total length of antenna,		0.346 mm.								

Male (macropterous).—Length about 1.0 mm. Color and structure essentially as in female, but more slender and with longer head; segment 3 of antennae fully four times as long as wide; abdominal tergites and sternites fringed posteriorly as in female; tergite of segment 9 without finger-like chitinous processes, but with the two usual pairs of long, strong bristles behind middle; sternites 4-8 with the usual trans-

¹ For illustrations of the antennae of related species see Hood, *Ins. Insc. Menstr.*, Vol. III, 1915, figs. 1, 2, 4, and 6.

verse, pale, non-chitinous areas at their extreme anterior margins, highly variable in form though usually progressively larger posteriorly.

Measurements of allotype (δ): Length 0.98 mm.; head, length 0.116 mm., greatest width 0.149 mm.; pronotum, length 0.152 mm., width 0.211 mm.; pterothorax, width 0.263 mm.; fore wings, length 0.645 mm., width at middle 0.042 mm., near base 0.088 mm.; abdomen, width 0.213 mm.

Antennal segments	.....	1	2	3	4	5	6	7	8	9
Length (μ)	.....	28	37	88	50	33	36	24	16	18
Width (μ)	.....	31	27	21	21	19	18	13	12	8
Total length of antenna,		0.330 mm.								

Described from three individuals of each sex, taken by the writer at Macedon, New York, June 7, 1924, from flowers of *Prunus* sp.

This is probably the most easily recognized *Heterothrips* thus far described, differing sharply from all other species of the genus in that there is no median gap in the armature of the posterior margin of the tergites of the intermediate abdominal segments. The usual plan of the chitinous fringe, that of *H. arisaemae*, is shown in Fig. 1 on the accompanying plate, while that of the present species is illustrated in Fig. 2.

Heterothrips arisaemae Hood. (Pl. IV, fig. 1.)

Heterothrips arisaemae Hood, Bull. Ill. State Lab. Nat. Hist., vol. viii, 1908, p. 362, fig. 1.—Moulton, Tech. Ser. 21, Bur. Ent., U. S. Dept. Agr., 1911, pp. 17, 28.—Morgan (in part only), Proc. U. S. Nat. Mus., Vol. 46, 1913, p. 44.—Hood, Ins. Insc. Menstr., Vol. V, 1917, p. 56.

Originally described from Illinois and subsequently recorded by Morgan from Tennessee and by the writer from Virginia and Maryland, this species is represented in the material before me by a series of females taken at Macedon, New York, May 30, 1924, in flowers of *Arisaema triphyllum*. Morgan's records of the species from Florida require verification, as his specimens were from *Rhododendron* and honeysuckle; and his record of the species from Appomatox, Virginia, on grape, I have elsewhere² cited as pertaining to *H. vitis* Hood. *Arisaemae* has been taken only in the flowers of the two species of *Arisaema*—Indian Turnip or Jack-in-the-Pulpit (*A. triphyllum*) and Green Dragon or Dragon Root (*A. dracontium*). It is usually very

² Ent. News, Vol. xxvii, 1916, p. 106.

abundant, and in the latitude of Washington, D. C., has been taken most commonly in late April and early May. It has never been met with earlier than April 19 nor later than June 8, and the immature stages have never been found. Where and in what stage it spends the remainder of the year is unknown.

This species and the preceding one are the only representatives of the genus known to occur in New York.

Phloeobiothrips gen. nov.

(φλοιὸς, bark; βίος, life; θρίψ, a wood worm.)

Dorsal surface not deeply roughened nor deeply reticulated. Head very long, in the type species about 1.5 times as long as wide; occiput arched and swollen as seen from the side; eyes very small; cheeks with distinct, bristle-bearing warts; mouth cone short, broadly rounded at tip. Antennae eight-segmented, the terminal segment pedicellate. Fore tarsus of female unarmed; femur of male unarmed.

Type species: *Phloeobiothrips tumiceps* sp. nov.

In addition to the new species described below, this genus embraces *Phloeothrips* (*Hoplandrothrips*) *insolens* Hood. It is close to *Phlaeothrips* Haliday, but differ markedly in the form of the head, the unarmed fore tarsus of the female, and the differently shaped mouth cone. The first two of these characters separate it also from *Hoplandrothrips* Hood, in which one of its species was originally described, the male then being unknown.

Phloeobiothrips tumiceps sp. nov. (Pl. IV, figs. 4-8.)

Female (brachypterous).—Length about 2 mm. General color dark blackish brown (black to the naked eye), with maroon hypodermal pigmentation in head, thorax, and abdomen, exclusive of tube; antennae dark blackish brown, with basal two-fifths or less of segment 3 bright yellow, and the base of 1, and pedicels of 4, 5, and sometimes 6, yellowish; legs concolorous with body, except tarsi and all articulations, which are paler and yellowish.

Head (Pl. IV, figs. 4 and 7) about 1.54 times as long as wide, more than twice the median length of pronotum; sides subparallel, converging roundly to eyes and slightly to near base, thence somewhat diverging; occiput elevated, swollen, the eyes at a decidedly lower level; median portion of head nearly smooth, noticeably subreticulate laterally; cheeks each with about six bristles visible in profile, arising from short tubercles; vertex subconical, very slightly produced, somewhat overhanging; postocular bristles longer than eyes, di-

lated apically; middle of dorsum with a pair of pointed, accessory bristles half as long as postoculars. Eyes very small, about one-sixth as long as head, hardly as long as wide, somewhat narrower than their interval. Ocelli of moderate size, nearly equidistant; anterior ocellus borne at tip of vertex, posterior ocelli slightly in advance of center of eyes. Antennae about 1.5 times as long as head, slender; segment 3 clavate (Pl. IV, fig. 8); 4-7 pedicellate; 8 sub-lanceolate, pedicellate, about 2.6 times as long as wide (Pl. IV, fig. 5); sense cone formula:³ 3, 1-2; 4, 2-2; 5, 1-1⁺; 6, 1-1⁺; 7 with one on dorsum near apex. Mouth cone short, nearly attaining base of prosternum, labium broadly rounded at tip, slightly surpassed by the pointed labrum.

Prothorax hardly half as long as head and (inclusive of coxae) slightly less than 2.5 times as wide as long; pronotum faintly subreticulate along posterior margin and on either side of median line near anterior margin, anterior and posterior margins nearly concentric; all usual bristles present, dilated at tip, shorter than postoculars, antero-marginals shortest. Pterothorax narrower than prothorax, sides nearly straight and parallel excepting for the projecting anterior angles. Wings short, not nearly attaining base of abdomen, with two long, apically dilated bristles which are about comparable with the antero-marginals on pronotum. Fore tarsus without trace of tooth.

Abdomen about 1.2 times as broad as width of prothorax across coxae; tube nearly two-thirds as long as head, 2.7 times as long as basal width, about twice as wide at base as at apex, sides straight. Lateral bristles mostly knobbed, yellowish, of moderate length but shorter than in *insolens*, those on segment 9 only half as long as tube; terminal bristles nearly equal in length to tube, brownish, pointed.

Measurements of holotype (♀): Length 2.02 mm.; head, length 0.342 mm., greatest width 0.222 mm.; width near base 0.207 mm.; eyes, length 0.057 mm., width 0.060 mm.; interval 0.066 mm.; postocular bristles, length 0.084 mm.; pronotum, length 0.158 mm., width (inclusive of coxae) 0.383 mm.; pterothorax, width 0.354 mm.; abdomen, width 0.452 mm.; tube, length 0.225 mm., width near base 0.082 mm., at apex 0.040 mm.

³ The explanation of the formula used in the description of the antennal sense cones has been given by the author in *Ann. Ent. Soc. Amer.*, Vol. I, 1908, p. 285, and in *Ent. News*, Vol. XX, 1909, p. 29, footnote.

Antennal segments	1	2	3	4	5	6	7	8
Length (μ)	48	66	84	76	80	66	54	44
Width (μ)	44	34	36	34	31	29	26	17
Total length of antenna, 0.52 mm.								

Male (brachypterous).—Length about 1.7 mm. Color and structure essentially as in female, but with head, antennae, and body (particularly the abdomen) more slender; fore tarsus sometimes unarmed, sometimes with a short, blunt tooth (Pl. IV, fig. 6).

Measurements of allotype (δ): Length 1.65 mm.; head, length 0.279 mm., greatest width 0.177 mm., width near base 0.165 mm.; eyes, length 0.056 mm., width 0.048 mm., interval 0.056 mm.; postocular bristles, length 0.076 mm., pronotum, length 0.135 mm., width (inclusive of coxae) 0.315 mm.; pterothorax, width 0.300 mm.; abdomen, width 0.327 mm.; tube, length, 0.173 mm., width at base 0.065 mm., at apex 0.034 mm.

Antennal segments	1	2	3	4	5	6	7	8
Length (μ)	44	56	74	70	71	61	50	38
Width (μ)	38	32	30	32	28	27	26	17
Total length of antenna, 0.46 mm.								

Described from 19 ♀♀ and 4 ♂♂ taken by the writer under bark of fallen branches and saplings in a lowland woods near Macedon, New York, May 11, October 26, November 5, and November 9, 1924.

This species is close to *Ph. insolens* (Hood),⁴ but may readily be known by the dark, blackish brown, instead of yellow, tibiae. The insect is of a much darker color throughout than *insolens*, and the third antennal segment is yellow only in the basal portion. In *tumiceps*, furthermore, the eighth antennal segment is about 2.6, instead of 3, times as long as wide; the abdominal bristles are shorter, those at the sides of segment 9 being about half as long as the tube, instead of nearly as long; and the tarsal tooth of the male is either entirely wanting or, more rarely, short and blunt (Pl. IV, fig. 6), instead of moderately long and acute.

⁴ One female and one male of *insolens* were taken by Dr. J. W. Folsom at Homer, Illinois, March 8 and March 2, 1924, respectively, under bark on *Acer saccharum*. This brings the total number of known specimens of this species to five, of which two are males.

EXPLANATION OF PLATE V.

(J. D. H. del., all camera lucida, except Fig. 7.)

- Fig. 1.—*Heterothrips arisaemae* Hood. Posterior margin of second abdominal tergite at right of median line, ♀.
- Fig. 2.—*Heterothrips limbatus* sp. nov. Posterior margin of second abdominal tergite at right of median line, ♀, paratype.
- Fig. 3.—*Heterothrips limbatus*. Segment 3 of left antenna, ♀, paratype.
- Fig. 4.—*Phloeobiothrips tumiceps* gen. et sp. nov. Head and prothorax, ♀, paratype, dorsal view, showing sculpture of portion of head (all bristles on legs and antennae omitted).
- Fig. 5.—*Phloeobiothrips tumiceps*. Tip of left antenna, ♀, paratype.
- Fig. 6.—*Phloeobiothrips tumiceps*. Right fore tarsus, ♂, allotype (all bristles omitted).
- Fig. 7.—*Phloeobiothrips tumiceps*. Head and prothorax, ♀, paratype, lateral view (all minor bristles omitted).
- Fig. 8.—*Phloeobiothrips tumiceps*. Segment 3 of left antenna, ♀, paratype.
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CORRECTION.—The reference in the paper on Aquatic Hemiptera, by Wm. E. Hoffman (this BULLETIN, 1923, p. 9) to the previous year was to 1923, the year of the experiments.